

2001 FIRST ROBOTICS COMPETITION

TEAM UPDATE #3

Date: January 10, 2001

DUPLICATION OF THE 2001 FIRST ROBOTICS COMPETITION MANUAL

A number of teams have reported difficulty in duplicating the Manual due to the presence of the copyright notice. FIRST encourages teams to duplicate the Manual for team use. Printers requiring written permission should refer to the following text.

Notice to Printers

Teams are hereby permitted to make an unlimited number of reproductions of the 2001 FIRST Robotics Competition Manual for team use.

RULE UPDATE

The following rule is added:

M19. All fabrication of robot parts must cease once your robot has been shipped at the end of the six week initial build period. Teams wishing to fabricate additional parts may purchase off-the-shelf materials and bring them to the event site. Fabrication may resume after the team has checked-in at an event site on Thursday. Fabrication of robot parts when a robot is at an event must take place on site.

Teams competing in multiple events may continue fabrication of robot parts after an event until the Tuesday deadline for having the robot "out of team hands" for shipment to the next event. (See the Regional Events and National Championship sections of the manual for details on shipping deadlines.) These new parts may be brought to events by the team or shipped with the robot to the event site. The new parts are not required to be identical to the parts on your shipped robot.

This rule is intended to allow teams to fabricate replacements for parts damaged or otherwise not functioning properly at an event. It is our hope that this will allow all teams to keep their robots functioning through a series of events. We will rely upon your gracious professionalism to not continue fabrication of new parts past the shipping deadlines.

TORQUE MOTOR INFORMATION

All torque motors from Belimo provided in the kits have stickers on the side that read "For Training Purposes Only". Please disregard the stickers. The motors were donated by Belimo to FIRST and may be used on your robot.

ENGINEERING CHANGE NOTICE

ECN #1: 01/10/01

Effective the above date, the changes noted below have been authorized and will be reflected in a future update of the indicated document:

Document being changed: 2001 Field Components (Bill of Materials) revision dated 01/08/01

Title line: Change title to read “2001 Field Components Bill of Materials: Rev #2, 01/10/01.

Table header: was: “Length”, is now: “Size”.

Line#1: # Req.: was: 8/goal, is now: 16/goal.

Line #10: Part #: was: R3, is now: G1. Length: was 34 ¼”, is now: 36 ½”.

Line #29: Material: was: 5/16 - 20 x 2 ½”, is now 5/16 - 18 x2 ½”.

Line # 41: Length: was 40 ¼” x47”, is now: 40 ¼” x46 ½”

Line # 64: Part #: was B3, is now B4

Note line under table (beneath 1st. two columns): was: “last revised 01/08/01”. Is now: (removed reference to revision date and placed it on title line above table.)

Document being changed: 01-FLD-0001-D sheet 2 of 2

View labeled “Goal C-C”: Add the following note: “The outer bolt holes of the grab bar mounts (Part # KK70-7) are in-line with the outer bolt holes of the caster bases. These holes fall approximately 1” in from the adjacent edge of the goal base.”

ADDITIONAL HARDWARE LIST UPDATE

The following item is added to the Additional Hardware List:

Switches	Any amount, off-the-shelf, non-powered
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RULE UPDATE

In order to clarify when balls are in scoring position, Rule SC3 has been reworded as follows:

- SC3. The alliance receives one (1) point for each small black ball that is supported by a goal and not in contact with a robot or the surface of the playing field. The alliance receives ten (10) points for each large ball that is ~~on top of~~ supported by a goal and not in contact with a robot or the surface of the playing field. *Refer to Figure 1.2 Ball Positions and Values.*

PNEUMATICS CLARIFICATION

Robots may contain up to six (6) pneumatic cylinders. With the exception of ordering additional cylinders from the "FIRST Custom Cylinder Order Form", only the parts listed in the "FIRST Pneumatic Component Bill of Material" may be used for pneumatics on the robot. No additional valves, tubing, pressure switches, volume chambers, fittings, etc. may be used. In order to use all six cylinders, it is necessary to drive more than one cylinder from a single valve.

QUESTIONS & ANSWERS

- Q10. Please clarify Rule SC4. I am not sure what you mean by "completely on ... the line".
- A10. It means that the entire line is counted as "in", versus an imaginary half-way point dividing the line or having to be entirely past the line.
- Q11. If we tip the goal on it's side and lay all four large balls along the pipes, do they all count?
- A11. Yes, as long as they are not touching a robot or the surface of the playing field. The orientation of the goal is not considered.
- Q12. With regard to the 130lb weight limit and rule M12, do all of the subsystems have to be on the robot when the robot weight is checked or may we check the robot weight several times in different configurations?
- A12. As long as each configuration meets the size and weight requirements, then it is ok. Therefore, it may be necessary for several trips to the scale and sizing box, but you have more flexibility in your robot design possibilities. For the purpose of the Featherweight in the Finals award, we will consider the heaviest configuration of the robot.
- Q13. May we pass the large balls to the human players over the top of the player station?
- A13. Yes.
- Q14. If a robot is holding the vertical PVC of a goal and the robots "hand" is incidentally in contact with a 1 point ball inside the goal, does that 1 point not count?
- A14. Yes, that ball would not count.
- Q15. Is the ramp fixed to the playing field via a pivot hinge or similar attachment, or is it held in place solely by gravity and friction. Is it

possible for a robot to relocate the horizontal position of the bridge during competition?

A15. Please refer to the playing field blueprints for information on the construction of the field. The bridge is held in place vertically by gravity and horizontally by the angle brackets on it's bottom and on the 4x6 base. Unseating the bridge from the 4x6 base is not expected to be "easy" due to the dimensions of the angle brackets and the weight of the bridge. Intentionally unseating the bridge will be considered "damage" to the field and lead to disqualification of the alliance. Unintentional unseating of the bridge will not be penalized, but it would be impossible to "balance" the bridge because it would not be supported exclusively by the base. See Rule SC6.

Q16. May we manufacture gears and pulleys from material purchased from Small Parts or on the Additional Hardware List?

A16. Yes. See Rule K2.

Q17. The Additional Hardware List only allows 6 timing pulleys. Is this limited to specifically timing belt pulleys, or are v-belt pulleys acceptable?

A17. The Additional Hardware List specifically specifies timing pulleys and timing belt. This means that the pulleys should have special grooves and the belt should have matching bumps so as to prevent slippage when the belt travels around the pulley. V-belts, O-belts, etc. and matching pulleys do not meet this definition. Timing belts may be single or double sided.

Q18. May a robot intentionally disengage a part to be left on the field, such as a chock to keep a goal from rolling off the bridge? If so, will the team be considered to be out of the endzone on this basis?

A18. No, see Rule DA4. Rule SC10 covers parts accidentally left on the field.

Q19. GM22 states that robots may react against the pipe and the bridge which divides the field. No mention is made of the 4x4 which is under the pipe which divides the field. May we react against this section of 4x4 (say by driving over it with a very short robot), or not?

A19. Yes.

Q20. Would a robot on the bridge, with a very long arm extended to the end zone (but not touching the floor), qualify for the 10 pts for being "in" the end zone?

A20. No. The bridge is considered part of the playing field with respect to Rule SC4.

Q21. The rules state that anyone in the operating area may touch balls, but only students may feed the balls over the wall. Is it therefore acceptable for the adult mentor to hand the ball to the student, if that is most convenient for them at the time?

A21. Yes.

Q22. May we use the included pneumatics equipment with the robot to make a air over oil hydraulic piston?

A22. No, you may only use air in the pneumatic equipment.

Q23. May we use air driven motors on our robot in any capacity?

A23. Please see Rules K1, M14, M15, and Team Update #2. You may not use a traditional “air motor”, but you could build a mechanism akin to a steam locomotive that uses the allowed air cylinders to turn wheels.